

# ABSTRACT OF THE DISCLOSURE

A multi-stage preferential oxidation reactor for removing carbon-monoxide from a product-gas comprises at least one preferential oxidation reactor stage having a product-gas stream inlet end and a product-gas stream outlet end. A first inlet is provided to introduce the product-gas stream into the preferential oxidation reactor stage, and is located at the product-gas stream inlet end of the preferential oxidation reactor stage. The first inlet is configured with a pulsator for pulsing the flow of the product-gas stream into the preferential oxidation reactor stage. A second inlet is also provided to introduce an oxidant into the preferential oxidation reactor stage. The second inlet is located at the product-gas stream inlet end of the oxidizer preferential oxidation reactor stage. An outlet is provided for removal of the treated product-gas stream from the preferential oxidation reactor stage.